Poisoning of birds of prey by anticholinesterase insecticides in agricultural areas of southwestern British Columbia

John Elliott, Laurie Wilson, Canadian Wildlife Service, Delta, BC*
Pierre Mineau, Canadian Wildlife Service, Ottawa, ON
Malcolm McAdie, British Columbia Ministry of Water, Lands & Air Protection

Keywords: anticholinesterase pesticides, raptors, bald eagles, OP pesticides, carbamates, poisoning

Since 1990, we have investigated mortality of raptors, particularly bald eagles, in southwestern British Columbia. Carcasses and sick birds were obtained from rehabilitators, veterinarians and conservation officers. Blood and crop contents were collected from live birds; dead birds were necropsied and brains assayed for cholinesterase activity. We examined 780 eagles and diagnosed anticholinesterase poisoning in 80 (10.2%) cases. In the Fraser delta, an intensive agriculture and raptor wintering area, of 183 eagles examined, 53 (29%) were poisoned by anticholinesterase insecticides. Most poisonings occurred during winter and resulted from scavenging on waterfowl carcasses. The ducks were poisoned by ingesting granules of registered organophosphorus or carbamate insecticides applied the previous spring for wireworm control. Some OPs and carbamates persist up to nine months after labeled application in the low pH conditions of the Fraser delta. The first mortalities were caused by carbofuran. Successive replacement of carbofuran (avian HD5= 0.21 mg/kg) with progressively less toxic, but not necessarily less persistent, alternatives, phorate (HD5=0.34 mg/kg) and fonofos (HD5=3.86 mg/kg) failed to stop annual poisonings. Each of those chemicals has since been withdrawn from local use. Since 2000, chlorpyrifos (HD5=3.76 mg/kg), under a year-by-year registration for wireworm control, has not been related to raptor mortality.